IN THE CLAIMS

Please amend claims 1, 8, 11-13, 15-18, 23, 25-26, and 28-
32 as follows below.

Please cancel claims 7, 20-22, and 33-61 without prejudice.

Please add new claims 62-77 as follows below.

The following listing of claims replaces all prior
versions, and listings, of claims in the application:

MARKED UP VERSION OF PENDING CLAIMS

1   1. (Currently Amended)   An apparatus comprising:

2   a data alignment device including

3   a plurality of input channels to receive a stream

4   of input characters;

5   a control code detector coupled to the plurality

6   of input channels to detect the occurrence of an

7   aligning character in each input channel;

8   a plurality of buffers, each buffer coupled to one

9   input channel to store the input characters received

10   over that input channel;

11   a plurality of output channels, each output

12   channel coupled to one buffer and to a corresponding

13   input channel to transmit a stream of characters from

14   the corresponding buffer; and

15   a control unit coupled to the control code

16   detector and buffers, and configured to monitor the

17   occurrence of an aligning character in each input

18   channel, to hold the aligning character and

19   subsequently received input characters for each input

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20   channel in the corresponding buffer until an aligning
21   character has been detected on every input channel,
22   then resume transmissions over all of the output
23   channels starting with each aligning character on the
24   corresponding buffers and then the subsequently
25   received input characters in the order in which they
26   were received,
27   wherein the control unit to stop holding the
28   aligning character and subsequently received input
29   characters for each input channel in the corresponding
30   buffer if an aligning character has not been detected
31   on every input channel within a given period of time
32   from the first detected aligning character.

1   2. (Original) The apparatus of claim 1 wherein
2   the control unit is configured to generate filler
3   characters and transmit them over those output channels
4   where an aligning character has been detected on its
5   corresponding input channel.

1   3. (Original) The apparatus of claim 1 wherein
2   the control unit to stop generating and transmitting
3   the filler characters once an aligning character has been
4   detected on every input channel.

1   4. (Original) The apparatus of claim 1 wherein
2   the plurality of buffers are configured as first-in,
3   first-out stacks.

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1   5. (Original)   The apparatus of claim 1 wherein

2   transmissions over the plurality of output channels

3   includes digital transmissions.

1   6. (Original)   The apparatus of claim 1 further comprising:

2   an output clock to transmit one character over each

3   output channel on each clock cycle.

1   7. (Cancelled)

1   8. (Currently Amended)   An [[The]] apparatus ~~of claim 1~~

2   comprising:

3   a data alignment device including

4   a plurality of input channels to receive a stream

5   of input characters;

6   a control code detector coupled to the plurality

7   of input channels to detect the occurrence of an

8   aligning character in each input channel;

9   a plurality of buffers, each buffer coupled to one

10   input channel to store the input characters received

11   over that input channel;

12   a plurality of output channels, each output

13   channel coupled to one buffer and to a corresponding

14   input channel to transmit a stream of characters from

15   the corresponding buffer; and

16   a control unit coupled to the control code

17   detector and buffers, and configured to monitor the

18   occurrence of an aligning character in each input

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19   channel, to hold the aligning character and

20   subsequently received input characters for each input

21   channel in the corresponding buffer until an aligning

22   character has been detected on every input channel,

23   then resume transmissions over all of the output

24   channels starting with each aligning character on the

25   corresponding buffers and then the subsequently

26   received input characters in the order in which they

27   were received, wherein the control unit stops holding

28   the aligning character and subsequently received input

29   characters for each input channel in the corresponding

30   buffer if an aligning character has not been detected

31   on every input channel within a given number of

32   characters from the first detected aligning character.

1   9.   (Original)   The apparatus of claim 1 wherein

2   the aligning character is the character /A/.

1   10. (Original)   The apparatus of claim 1 wherein

2   the filler character is the character /R/.

1   11. (Currently Amended)   An [[The]] apparatus of claim 1

2   further comprising:

3   a data alignment device including

4   a first plurality of input channels to receive a

5   stream of input characters,

6   a control code detector coupled to the plurality

7   of input channels to detect the occurrence of an

8   aligning character in each input channel,

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9   a plurality of buffers, each buffer coupled to one

10   input channel to store the input characters received

11   over that input channel,

12   a first plurality of output channels, each output

13   channel coupled to one buffer and to a corresponding

14   input channel to transmit a stream of characters from

15   the corresponding buffer, and

16   a first control unit coupled to the control code

17   detector and buffers, and configured to monitor the

18   occurrence of an aligning character in each input

19   channel, to hold the aligning character and

20   subsequently received input characters for each input

21   channel in the corresponding buffer until an aligning

22   character has been detected on every input channel,

23   then resume transmissions over all of the output

24   channels starting with each aligning character on the

25   corresponding buffers and then the subsequently

26   received input characters in the order in which they

27   were received;

28   and

29   a rate matching device including

30   a second plurality of input channels coupled to

31   the plurality of output channels of the data alignment

32   device to receive the output stream of characters from

33   the data alignment device, [[;]]

34   a buffer coupled to the plurality of input

35   channels to store the characters received over the

36   input channels of the rate matching device, [[;]]

37   a <u>second</u> plurality of output channels coupled to

38   the buffer and each output channel corresponding to one

39   input channel of the rate matching device to transmit a

40   stream of characters from the buffer<u>,</u> [[;]] and

41   a <u>second</u> control unit coupled to the buffer and

42   configured to control the transmission of characters

43   from the buffer, insert a filler character if an

44   underflow condition is detected, and remove a filler

45   character if an overflow condition is detected.

1   12. (Currently Amended)   The apparatus of claim 11 further

2   comprising:

3   a data counter to monitor the number of data stored in

4   the ~~rate matching~~ buffer <u>of the rate matching device</u> at any

5   one time.

1   13. (Currently Amended)   The apparatus of claim 11 wherein

2   the buffer <u>of</u> [[for]] the rate matching device is

3   configured as a first-in, first-out buffer stack with six

4   storage elements.

1   14. (Original)   The apparatus of claim 11 further

2   comprising:

3   a control code detector for the rate matching device

4   coupled to the plurality of input channels to detect the

5   occurrence of an aligning character in each input channel

6   for the rate matching device before initiating the

7   transmission of characters from the buffer.

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1   15. (Currently Amended) The apparatus of claim 11 wherein
2   the second control unit of [[for]] the rate matching
3   device only removes or inserts the filler character during
4   the interval between two data packets.

1   16. (Currently Amended) The apparatus of claim 11 wherein
2   the buffer of [[for]] the rate matching device
3   comprises one buffer for each input channel to the rate
4   matching device.

1   17. (Currently Amended) The apparatus of claim 11 wherein
2   the second control unit of the rate matching device
3   does not begin to transmit characters from the rate matching
4   buffer until a plurality of characters have been stored in
5   the rate matching buffer.

1   18. (Currently Amended) The apparatus of claim 11 wherein
2   the transmission of characters from the buffer of the
3   rate matching device buffer is synchronous over all output
4   channels for the rate matching device.

1   19. (Original)   The apparatus of claim 11 wherein
2   the apparatus comprises an integrated circuit device.

1   20-22. (Cancelled)

1   23. (Currently Amended) A [[The]] method of claim 20
2   further comprising:

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3   <u>aligning one or more transmission channels including,</u>

4   <u>detecting the occurrence of an aligning character</u>

5   <u>in a plurality of input channels;</u>

6   <u>stalling the retransmission of the aligning</u>

7   <u>character and the subsequently received</u>

8   <u>characters for each transmission channel where</u>

9   <u>an aligning character has been received until an</u>

10   <u>aligning character has been detected on every</u>

11   <u>input channel;</u>

12   <u>buffering the aligning character and subsequently</u>

13   <u>received characters for each input channel in a</u>

14   <u>buffer until an aligning character has been</u>

15   <u>detected on every input channel; and</u>

16   <u>transmitting the stalled characters, starting with</u>

17   <u>the aligning characters and continuing with the</u>

18   <u>subsequently received characters once an</u>

19   <u>aligning character has been received on every</u>

20   <u>input channel.</u>

1   24. (Original)   The method of claim 23 further

2   comprising:

3   resetting the buffer if an aligning character is not

4   detected in every input channel within a maximum number of

5   characters from the first received aligning character in any

6   input channel.

1   25. (Currently Amended)   The method of claim [[20]] <u>23</u>

2   wherein

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3   the aligning character is the character /A/.

1   26. (Currently Amended)   The method of claim [[20]] 23
2   further comprising:

3   transmitting one or more filler characters over an
4   output channel corresponding to an input channel on which an
5   aligning character has been detected until an aligning
6   character has been detected in every input channel.

1   27. (Original)   The method of claim 26 wherein
2   the filler character is the character /R/.

1   28. (Currently Amended)   A [[The]] method of claim 20
2   further comprising:
3   matching the transmission rates of a first clock to the
4   transmission rates of a second clock including,
5   receiving one or more characters over a plurality
6   of input channels synchronized by the first
7   clock, [[;]]
8   buffering the one or more characters received;
9   transmitting the one or more buffered characters
10   over one or more output channels synchronized by
11   the second clock, [[;]]
12   inserting a filler character in each output
13   channel if an underflow condition is detected,
14   [[;]] and
15   removing a filler character in each output channel
16   if an overflow condition is detected; and
17   aligning one or more transmission channels including,

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18   detecting the occurrence of an aligning character
19   in the plurality of input channels;
20   stalling the retransmission of the aligning
21   character and the subsequently received
22   characters for each transmission channel where
23   an aligning character has been received until an
24   aligning character has been detected on every
25   input channel; and
26   transmitting the stalled characters, starting with
27   the aligning characters and continuing with the
28   subsequently received characters once an
29   aligning character has been received on every
30   input channel.

1   29. (Currently Amended) The method of claim 28 wherein
2   the matching of the transmission rates further
3   includes, comprises:
4   awaiting the synchronous detection of an aligning
5   character in each input channel before
6   initiating the transmission of the one or more
7   buffered characters from the buffer.

1   30. (Currently Amended) The method of claim 28 wherein
2   in matching the transmission rates, the removing and
3   the inserting of the filler character only occurs during the
4   interval between two data packets.

1   31. (Currently Amended) The method of claim 28 wherein

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2   the transmission of the one or more buffered characters

3   does not begin until a plurality of characters have been

4   buffered.

1   32. (Currently Amended) The method of claim 28 wherein

2   the transmission of the one or more buffered characters

3   is synchronous over all of the one or more output channels

4   for the rate-matching device.

1   33-61. (Cancelled)

1   62. (New) The apparatus of claim 8 wherein

2   the control unit is configured to generate filler

3   characters and transmit them over those output channels

4   where an aligning character has been detected on its

5   corresponding input channel.

1   63. (New) The apparatus of claim 8 wherein

2   the control unit to stop generating and transmitting

3   the filler characters once an aligning character has been

4   detected on every input channel.

1   64. (New) The apparatus of claim 8 wherein

2   the plurality of buffers are configured as first-in,

3   first-out stacks.

1   65. (New) The apparatus of claim 8 wherein

2   transmissions over the plurality of output channels

3   includes digital transmissions.

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1 66. (New)   The apparatus of claim 8 further comprising:
2   an output clock to transmit one character over each
3 output channel on each clock cycle.

1 67. (New)   The apparatus of claim 8 wherein
2   the aligning character is the character /A/.

1 68. (New)   The apparatus of claim 8 wherein
2   the filler character is the character /R/.

1 69. (New)   The apparatus of claim 8 wherein
2   the apparatus comprises an integrated circuit device.

1 70. (New)   The method of claim 23 wherein
2   first received characters are transmitted first.

1 71. (New)   The method of claim 23 wherein
2   transmitting the stalled characters comprises
3   transmitting synchronously over all output
4   channels.

1 72. (New)   The method of claim 28 further comprising:
2   resetting the buffer if an aligning character is not
3 detected in every input channel within a maximum number of
4 characters from the first received aligning character in any
5 input channel.

1 73. (New)   The method of claim 28 wherein

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2   the aligning character is the character /A/.

1   74. (New)   The method of claim 28 further comprising:
2   transmitting one or more filler characters over an
3   output channel corresponding to an input channel on which an
4   aligning character has been detected until an aligning
5   character has been detected in every input channel.

1   75. (New)   The method of claim 74 wherein
2   the filler character is the character /R/.

1   76. (New)   The method of claim 28 wherein
2   first received characters are transmitted first.

1   77. (New)   The method of claim 28 wherein
2   transmitting the stalled characters comprises
3   transmitting synchronously over all output
4   channels.